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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/686,952	10/15/2003	Philip A. Chou	MS1-1677US	8804

22801 7590 06/15/2007

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EXAMINER	
DAVENPORT, MON CHERI S	

ART UNIT	PAPER NUMBER
2616	

NOTIFICATION DATE	DELIVERY MODE
06/15/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/686,952	CHOU ET AL.	
	Examiner	Art Unit	
	Mon Cheri S. Davenport	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *2/19/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-11 and 17-19 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Regarding **Claims 1-11 and 17-19**, the claimed carrier wave is nonstatutory subject matter. Since a carrier wave (see specification page 32, line 19) is not a tangible, physical article or object to constitute a manufacture, and it's not a machine, process or composition of matter; Non- functional descriptive material cannot be made statutory even if claimed as recorded on some computer readable medium. Claims 1-11 and 17-19 does not fall within a statutory category of invention.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. **Claims 1-21** rejected under 35 U.S.C. 102(e) as being anticipated by Wolfgang (US Patent Number 6,609,223).

Regarding **Claim 1** Wolfgang discloses one or more computer-readable media comprising computer-executable instructions that perform the following when executed by a computer:

receiving incoming packets of data and metadata**(see Fig. 1A, original message(data), section n-k wildcard packets(metadata))** ***(see co. 9, lines 14-17, one interleaved packets are transmitted to the subscriber computer, see col. 3, lines 36, packet data arrives from a source);***

synchronizing the incoming packets***(see col. 5, line 59-61, packet header has timestamp so packet's data are put back in a time ordered data stream)*** ; and

linearly combining ***(see col. 5, lines 1-20, the original source packet is prefixed with a data field , the resulting packet (containing length and information S(i)) will be denoted X) X and Y respectively represent the jth byte of the ith unencoded source packet X and the ith encoded packet Y wherein Y=X for I=1-k and Y(k+1), Y(k+2), ..., Y(N) are error correcting wildcard packets , the data and meta data are linearly combined)*** the data of each of synchronized incoming packets into an outgoing packet ***(see col. 4, line 39-42, input packets are encoded (linearly combined) with both source and wildcard packets).***

Regarding **Claim 2** Wolfgang discloses everything as applied above (*see claim 1*). In addition the computer-readable media includes:

sending the outgoing packet***(see col. 8, line 66, the wildcard and source packets are sent).***

Regarding **Claim 3** Wolfgang discloses everything as applied above (*see claim 1*). In addition the computer-readable media includes:

synchronization information in the metadata of the outgoing packet***(see col. 7, lines 30-32, the outgoing packets include in the header information indicating formation, see col. 5, lines 55-60, the outgoing packet has header information indicating to which group of packets it belongs and also provided the timestamp to be time-ordered).***

Regarding **Claim 4** Wolfgang discloses everything as applied above (*see claim 1*). In addition the computer-readable media includes:

wherein the synchronizing includes reading synchronization information from the metadata, the synchronization information including a sequence number***(see col. 5,lines 55-61, the outgoing packet has header information indicating to which group of packets it belongs and also provided the timestamp to be time-ordered).***

Regarding **Claim 5** Wolfgang discloses everything as applied above (*see claim 1*). In addition the computer-readable media includes:

wherein the synchronizing includes reading synchronization information from the metadata, the synchronization information including time slots, wherein the incoming packets having matching time slots are deemed synchronized***(see col. 5,lines 55-61, the outgoing packet(metadata) has header information indicating to which group of packets it belongs and also provided the timestamp(time slots) to be time-ordered(synchronized))***.

Regarding **Claim 6** Wolfgang discloses everything as applied above (*see claim 1*). In addition the computer-readable media includes:

wherein the synchronizing includes reading synchronization information from the metadata***(see col. 5,lines 55-61, the outgoing packet(metadata) has header information indicating to which group of packets it belongs and also provided the timestamp(time slots) to be time-ordered(synchronized))***.

Regarding **Claim 7** Wolfgang discloses everything as applied above (*see claim 1*). In addition the computer-readable media includes:

receiving the outgoing packet and other outgoing packets***(see figure 1B, Share1 and share 2 packets, see col. 3, lines 36, packet data arrives from a source(outgoing packets));***

synchronizing the outgoing packet and the other outgoing packets***(see col. 5, line 59-61, packet header has timestamp so packet's data are put back in a time ordered data stream)***;

linearly combining the synchronized outgoing packets into a second generation outgoing packet***(see col. 9, lines 11-17 packets are interleaved, one share of interleaved packets are transmitted to the subscriber computer at the same time as several others shares of the interleaved packets , see figure 1B).*** ; and

sending the second generation outgoing packet of data***(see col. 9, lines 11-17 packets are interleaved, one share of interleaved packets are transmitted to the subscriber computer at the same time as several others shares of the interleaved packets , see figure 1B).***

Regarding **Claim 8** Wolfgang discloses everything as applied above (*see claim 1*). In addition the computer-readable media includes:

wherein the data of each of the incoming packets includes one or more parts, or a linear combination of one or more parts***(see col. 4, line 39-42, input packets are encoded (linearly combined) with both source and wildcard packets)***, of a set of data and further comprising recording***(see col. 2 lines 63-64, the packets are received then collected into a virtual file(recorded)),*** within the outgoing packet, a complete linear combination of the set of data that is present within the outgoing packet***(see col. 8, line 66, the wildcard and source packets (linear combination) are sent).***

Regarding **Claim 9** Wolfgang discloses everything as applied above (*see claim 1*). In addition the computer-readable media includes:

wherein the data of each of the incoming packets includes one or more vectors, or a linear combination of one or more vectors***(see col. 7, lines 42-51, the matrix of fig 5 is used and applied to the transmitted packets)*** of a set of data vectors ***(see figure 5)*** and further comprising recording***(see col. 2 lines 63-64, the packets are received then collected into a virtual file(recorded))***, within the outgoing packet, coefficients representing all linear combinations of the set of data vectors present within the data of the outgoing packet***(see col. 8, line 66, the wildcard(coefficients) and source packets (linear combination) are sent, see col. 7, lines 63-66, each wildcard header contain information imaginary zeros, so it can be reconstructed (disassembled))).***

Regarding **Claim 10** Wolfgang discloses everything as applied above (*see claim 1*). In addition the computer-readable media includes:

wherein the data of each of the incoming packets includes one or more vectors, or a linear combination of one or more vectors***(see col. 7, lines 42-51, the matrix of fig 5 is used and applied to the transmitted packets)***, of a set of data vectors***(see figure 5)*** and further comprising recording***(see col. 2 lines 63-64, the packets are received then collected into a virtual file(recorded))***, within the outgoing packet, information sufficient to disassemble the data in the outgoing packet into the set of data vectors if all but one of each of the vectors in the set of data vectors is known***(see col. 2 lines 63-64, the packets are received then collected into a virtual file(recorded), see col. 7, lines 63-66, each wildcard header contain information imaginary zeros, so it can be reconstructed (disassembled))***.

Regarding **Claim 11** Wolfgang discloses everything as applied above (*see claim 10*). In addition the computer-readable media includes:

wherein the recording is made into a header of the outgoing packet. ***(See col. 5, line 59-61, packet header has timestamp recorded so packet's data are put back in a time ordered data stream)***;

Regarding **Claim 12** Wolfgang disclose a system comprising:

a node of a communication network, wherein the node is capable of***(see col. 3, lines 41, subscriber computer):***

linearly combining data ***(see col. 5, lines 1-20, the original source packet is prefixed with a data field , the resulting packet (containing length and information S(i)) will be denoted X) X and Y respectively represent the jth byte of the ith unencoded source packet X and the ith encoded packet Y wherein Y=X for I=1-k***

and Y(k+1), Y(k+2), ..., Y(N) are error correcting wildcard packets , the data and meta data are linearly combined) from multiple incoming packets of data into an outgoing packet of data***(see col. 4, line 39-42, input packets are encoded (linearly combined) with both source and wildcard packets)***, the data from each of the multiple incoming packets being a linear combination of an original set of data vectors and each of the multiple incoming packets***(source packets)*** including incoming metadata **(see Fig. 1A, original message(data), section n-k wildcard packets(metadata))** ***(see co. 9, lines 14-17, one interleaved packets are transmitted to the subscriber computer, see col. 3, lines 36, packet data arrives from a source)***indicating the linear combination of the original set of data vectors**(see figure 5)** present in each of the multiple incoming packets***(see col. 8, line 66, the wildcard(coefficients) and source packets (linear combination) are sent, see col. 7, lines 63-66, each wildcard header contain information imaginary zeros, so it can be reconstructed (disassembled))***; and

recording into the outgoing packet, based on the linear combination performed on the data from the multiple incoming packets and the incoming metadata, outgoing metadata indicating the linear combination of the original set of data vectors**(see figure 5)** present in the outgoing packet***(See col. 5, line 59-61, packet header has timestamp recorded so packet's data are put back in a time ordered data stream)***.

Regarding **Claim 13** Wolfgang discloses everything as applied above (*see claim 12*). In addition the system includes:

wherein the node is further capable of:

receiving the incoming packets of data***(see col. 3, lines 36, packet data arrives from a source);*** and

sending the outgoing packet of data***(see col. 8, line 66, the wildcard and source packets are sent).***

Regarding **Claim 14** Wolfgang discloses everything as applied above (*see claim 12*). In addition the system includes:

wherein the node includes a computer server ***(see col. 3, lines 41, subscriber computer).***

Regarding **Claim 15** Wolfgang discloses everything as applied above (*see claim 12*). In addition the system includes:

wherein the node includes a computer ***(see col. 3, lines 41, subscriber computer).***

Regarding **Claim 16** Wolfgang discloses everything as applied above (*see claim 12*). In addition the system includes:

wherein the node includes a router ***(see col. 3, lines 41, subscriber computer).***

Regarding **Claim 17** Wolfgang discloses one or more computer-readable media comprising computer-executable instructions that perform the following when executed by a computer:

receiving incoming packets of data and metadata**(see Fig. 1A, original message(data), section n-k wildcard packets(metadata))** ***(see co. 9, lines 14-17, one interleaved packets are transmitted to the subscriber computer, see col. 3,***

lines 36, packet data arrives from a source),the data of each incoming packet being a linear combination***(see col. 5, lines 1-20, the original source packet is prefixed with a data field , the resulting packet (containing length and information S(i)) will be denoted X) X and Y respectively represent the jth byte of the ith unencoded source packet X and the ith encoded packet Y wherein Y=X for I=1-k and Y(k+1), Y(k+2), ..., Y(N) are error correcting wildcard packets , the data and meta data are linearly combined)*** of an original set of data vectors***(see figure 5)(see col. 7, lines 42-51, the matrix of fig 5 is used and applied to the transmitted packets)***, the data vectors in the original set of data vectors being identically partitioned***(see col. 5, line 43-44, the source packet data is divided into equal sized packets)*** into a first number of layers of data ***(see figure 5, wildcard computations(partitioned layers of matrix))***, wherein at least one of the data vectors contains a layer of data that is set to elements computable from the other data vectors***(see figure 5, the wildcard computation of vectors);***

determining, based on the metadata in each of the incoming packets, the linear combination of the original set of data vectors that is present within each of the incoming packets***(see col. 5, lines 43-48, frame of video is packetized(metadata) by the source , divided into equal size packets, the predefined size of the data block is then filled with 100 bytes of zeros(data vectors) for encoding)***; and

inverting ***(see figure 5, 9x9 identity matrix, see col. 7, line 45)***the data in each of the incoming packets to obtain a second number of layers of data of the original set of data vectors**(see figure 5)**, wherein the second number**(100 bytes)** is less than

the first number**(1500 bytes)** ***(see col. 5, lines 43-51, frame of video is packetized having 1500 bytes by the source , divided into equal size packets, the predefined size of the data block is then filled with 100 bytes of zeros(data vectors) for encoding)***; .

Regarding **Claim 18** Wolfgang discloses everything as applied above (*see claim 17*). In addition the computer-readable media includes:

wherein the elements computable from the other data vectors are zero***(see col. 5, lines 45-47, the 100 bytes(data vectors, see figure 5) are filled with zeros for encoding purposes).***

Regarding **Claim 19** Wolfgang discloses everything as applied above (*see claim 17*). In addition the computer-readable media includes:

wherein the metadata of each incoming packet indicates the linear combination of the original set of data vectors that is present within the incoming packet***(see col. 6, lines 65-67, the linear combination process is repeated for arriving of source packets)***

Regarding **Claim 20** Wolfgang discloses an apparatus comprising:

means for receiving incoming packets of information***(see col. 3, lines 41, subscriber computer)***, each of the incoming packets having incoming data and incoming metadata**(see Fig. 1A, original message(data), section n-k wildcard packets(metadata))** ***(see co. 9, lines 14-17, one interleaved packets are transmitted to the subscriber computer, see col. 3, lines 36, packet data arrives from a source)***, each of the incoming data being a linear combination***(see col. 5,***

lines 1-20, the original source packet is prefixed with a data field , the resulting packet (containing length and information S(i)) will be denoted X) X and Y respectively represent the jth byte of the ith unencoded source packet X and the ith encoded packet Y wherein Y=X for I=1-k and Y(k+1), Y(k+2), ..., Y(N) are error correcting wildcard packets , the data and meta data are linearly combined) (see col. 4, line 39-42, input packets are encoded (linearly combined) with both source and wildcard packets) of an original set of data vectors**(see figure 5)** and each of the incoming metadata indicating the linear combination present in each of the incoming data, ***see col. 6, lines 65-67, the linear combination process is repeated for arriving of source packets)***;

means for linearly combining the incoming data ***(see col. 3, lines 41, subscriber computer)***of the incoming packets of information into an outgoing packet of information***(see col. 8, line 66, the wildcard and source packets (linear combination) are sent(outgoing))***; and

means for recording outgoing metadata ***(see col. 3, lines 41, subscriber computer)***within the outgoing packet, the outgoing metadata indicating a linear combination of the original set of data vectors present in the outgoing data***(see col. 5,lines 55-61, the outgoing packet(metadata) has header information indicating to which group of packets it belongs and also provided the timestamp(time slots) to be time-ordered(synchronized))***.

Regarding **Claim 21** Wolfgang discloses everything as applied above (*see claim 20*). In addition the apparatus includes:

means for disassembling***(see col. 3, lines 41, subscriber computer)***, with aid from the outgoing metadata, the linear combination within the outgoing packet into the original set of data vectors***(see col. 8, line 66, the wildcard(coefficients) and source packets (linear combination) are sent, see col. 7, lines 63-66, each wildcard header contain information imaginary zeros, so it can be reconstructed (disassembled))***.

Citation of Pertinent Prior Art

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Guarneri et al. (US Patent Number 5,631,907) see abstract.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mon Cheri S. Davenport whose telephone number is 571-270-1803. The examiner can normally be reached on Monday - Friday 8:00 a.m. - 5:00 p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on 571-272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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June 6, 2007